*No. 3*

# MEMOIRS

OF THE

# KYANCUTTA MUSEUM

Kyancutta, South Australia.

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## Further Notes on

# Cyathospongia (Archaeocyathi)

## and other organisms

From the LOWER CAMBRIAN of Beltana, South Australia

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By

R. & J. BEDFORD

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*No. 3* KYANCUTTA, South Australia, *September, 1936.*


# Further Notes on Cyathospongia (Archaeocyathi) and other organisms

## From the LOWER CAMBRIAN of Beltana, South Australia


**By R. & J. Bedford**


NOTE:—The paper we have in hand on the families Archaeocyathidae and Coscinocyathidae is still not ready for the press; the present paper deals with a few of the more unusual types. Unless otherwise stated, all specimens are from the Ajax Mine, Beltana.

### ? PORIFERA.

Associated with the silicified Archaeos in the Ajax limestone we have found several specimens of a minute, straight or slightly curved, conical tubular organism. The fossil is about 12 mm. long by 1½ mm. diameter at the larger end, and tapers to a point. The wall is unsilicified, about 1/5 mm. thick at the larger end, and is, for the most part, only distinguishable from the matrix by being slightly more soluble in acid; from the outer surface a large number of minute silicified oval studs project inwards within the substance of the wall, and these may be regarded as probably representing casts in silica of a system of minute pores. The studs are oval in section, about ¼ mm. in longest diameter, and become progressively smaller towards the point of the cone. As a rule, they do not appear to penetrate right through the thickness of the wall; each stud appears to become smaller in section as it penetrates the wall. This suggests either that the original structure was a series of pits which bottomed within the wall, or else that if it consisted of pores these narrowed as they passed inwards and the inorganic filling of silica became jammed and failed to penetrate the entire depth of the pores. The fossils are often surrounded partially or wholly by inorganic siliceous deposits in the limestone, and in this case the studs become continuous outwardly with the surrounding silica. Occasionally also the lumen of the tube is partly occupied by silica, but the inner ends of the studs have not yet been observed continuous with such infilling. The studs are very closely packed and are regularly arranged in longitudinal rows, the longer diameter of each stud being at a right angle to the rows, and the studs of each row alternating with those of adjoining rows.

The lack of silicification of the wall substance of the fossils suggests that they were of different composition from normal Archaeo walls, but not necessarily that they were of such extreme difference as that between Silica and Calcite. The preservation of the fossils in a single fragment of the typical Ajax limestone is very capricious. An unsilicified Archaeo may lie side by side with silicified specimens. In typical material of the best quality some 90 per cent. of the usual Archaeos may be silicified and 10 per cent. unsilicified, whilst a few specimens will show silica porecasts and nothing else. In such material *Uranosphaera* is silicified or unsilicified in about equal proportions; *Heterocyathus* is more than half in the form of pore-casts, but a few fragments are normally silicified; isolated sponge spicules are usually well silicified.

### New Genus and Species *Tunkia incerta*.

We propose the name *Tunkia incerta* for the fossil described above. The generic name is from a blackfellow word "tunki," meaning "little." In its conical form and single wall it resembles the Monocyathina, but the latter are generally well silicified, and the doubt whether the structure was actually pitted or porous makes its correlation difficult. However, it seems to be an interesting little form, and its publication may lead to its identification by some other worker in Cambrian palaeontology. The fossil is shown on Plate XXI, fig. 88. (A) a specimen natural size; (B) a fragment enlarged 15 diameters; this shows a mass of surrounding silica in white, and also a plug of the same within the lumen; the unsilicified wall-substance is shown by vertical shading, the unsilicified matrix outside by cross hatching; (C) is a reconstruction of the organism enlarged 10 diameters.

## PORIFERA.

### New Family *URANOSPHAERIDAE.*

The remarkable sponges from the Lower Cambrian of Beltana which are described in this and previous memoirs as *Uranosphaera* form a group which appears to be worthy of family rank. The sponges of this new family may be defined as hollow spherical or ovoid forms of considerable size, one or two or more centimeters in diameter. The wall is built of a single layer of large spicules, each of which is composed of a body and a series of rays proceeding from it in the plane of the wall; the rays may be six or more in number and may be either simple pointed rods or branched, irregular and tuberculated structures. Some specimens have a single wall, which at one point may show an opening with either an everted or an inverted lip; in other specimens the inverted lip may be continuous with an inner concentric wall, also of spicular structure.

So far no connecting rods have been observed between the outer wall and the inner (except, of course, for the connection at the lip above referred to).

Specimens are very scarce, and too little is yet known about the family to attempt any general interpretation, but the resemblance to the metazoan "blastula" and "gastrula" may be noted. As is the case with the Archaeos, it is an open question whether the skeleton was originally siliceous or calcareous.

New Species *Uranosphaera ramosa.*

The genus *Uranosphaera* was described in previous memoirs, pp. 7 and 10, Figs. 35, 36, 39, 40. The present species is founded on a well-preserved fragment which appears to be part of an ovoid about 5 cm. in length by 2 to 3 cm. diameter.

The single wall is substantial, nearly 2 mm. in thickness, and is composed of a single layer of stout spicules whose centres are from 4 mm. to 3 mm. apart. The body of each spicule is a dense mass, rising somewhat above the general wall surface, and from this body proceed a variable number of irregular branching processes which fuse or interdigitate with those of neighboring spicules, so that the wall substance between the spicule-bodies is crowded with a moss-like mass of tuberculate branches. The fragment of the fossil which is preserved gives no indication of an invagination or an inner wall such as was found in the specimens of *Uranosphaera haxaster* shown in Figs. 39, 40, but the fragment is too incomplete to exclude the possibility that an invagination may have been present. *Uranosphaera ramosa* is shown in Plate XXI, Fig. 89. (A) being a view of the fossil natural size, (B) an enlarged view of the surface.

### Order *HETEROCYATHINA* (Okulitch).
### Family *HETEROCYATHIDAE* (Bedford).

New Species *Heterocyathus tertius.*

We have recently found a fragmentary specimen of a third species of *Heterocyathus;* for an account of former species see pp. 6, 7 and Figs. 34, 35. The new specimen is for the most part unsilicified, the substance of the fossil etching with acid and leaving cavities in inorganic silica deposits in the matrix, so that what were originally pores appear as papilla-like casts. But fortunately a small fragment of the outer wall is normally silicified, which enables a clear interpretation to be placed on the unsilicified parts, and also shows that the type specimen of *Heterocyathus minor* is, as we had suspected, a cast, whilst that of *Heterocyathus major* is a fragment of the actual fossil. The silicified fragment of the new fossil, which gives an internal view of the outer wall, is excellently preserved, and is a very remarkable structure. Outside is a continuous comparatively thin shell, fused to the inner surface of which, and standing out in high relief, are a series of radiating, spicular elements. Each of these has a central boss from which proceed a number of rays (18 in one case). The rays as a rule do not branch after leaving the boss; they are, as already stated, fused along the whole length to the outer shell, but stand out prominently from it, and each ray fuses at its distal extremity with a ray from an adjoining spicule, or with one ray each from two adjoining spicules. In this manner every ray finds either one or two partners. Each ray is of minimum size where it leaves the central boss and thickens progressively to reach a maximum at the point of union with a neighboring element. The pattern thus produced is very definite and characteristic. The thickening of the rays away from the central boss is the reverse of the arrangement found in the isolated spicules described in our second paper. From each boss a connecting rod passes inwards to the inner wall. The centres of radiation of the outer wall are from 6 to 9 mm. apart. The parts of the external shell between the rays are pierced by numerous fine pores about 6 to a millimeter. The inner wall of the specimen is unsilicified and poorly preserved, only a ghost-like shadow of a spicular structure being visible. The fossil is the cylindrical upper part of a specimen and shows a termination in which the two walls unite; the diameter is about 20 mm., the walls are about 5 mm. apart. None of the specimens of *Heterocyathus* yet found give a clear indication of the complete form. Two alternative reconstructions appear possible; either a cylindro-conical form growing from a pointed base (as in the Archaeocyathidae), or else a "gastrula" like ovoid with rounded base and an inner wall produced by invagination (as in some examples of the Uranosphaeridae). *Heterocyathus tertius* is illustrated in Plates XXI, XXII, Figs. 90, 91; 90(A) shows the fossil natural size; 91(B) (C) two alternative reconstructions; 90(B) internal view of the outer wall of the normally silicified portion, x 5; 90(E) natural cast of an unsilicified fragment, (a) being inorganic silica surrounding the fossil, (b) spicular rays, (c) spicular boss, the white dots silica casts of the pores; 90(C) "ghosts" of spicules in the unsilicified inner wall x 5, at (a) there is a suggestion of four pore-casts; 91 (A) a reconstructed transverse section x 8.

We add in Fig. 92 some additional sketches of *Heterocyathus minor* for comparison with the above. (A)

shows an actual fossil natural size; (B) shows a few radiating lines of outer-wall-pore-casts seen from the inner surface x 10; this shows that the pores are much larger than those of *H. tertius;* those near the centres of radiation slope outwards and towards the centres, and some of them branch as they pass outwards; those in the middle (b) between two centres of radiation have two or more branches which diverge outwardly towards the centres of radiation; at (a) (a) are seen two connecting rods each surrounded by an incrustation of secondary silica; (C) shows a wax squeeze of the natural cast of the inner wall x 6; (D) a reconstructed transverse section x 6.

*CYATHOSPONGIA* (Okulitch).

? Order *METACYATHINA* (Bedford).

? Family.

New Genus *Sigmocyathus.*

In 1910 T. Griffith Taylor described some fragments under the name of *Coscinocyathus didymoteichus;* no tabulae were visible in these fragments, so that the attribution to the genus *Coscinocyathus* was conjectural. We have found additional material which shows that the species attains a very large size, that no tabulae are present, and that it grows from a *Metacyathus*-like base. We propose to form a new genus *Sigmocyathus* for this fossil. Its family position, and whether it should be linked up with other genera, is left open for the moment; in our second memoir we described a form *Sigmofungia flindersi,* which we at first were inclined to place with the Metacyathina, but afterwards placed with the Spirocyathina on account of the presence of synapticulae; *Sigmocyathus* has sigmoidally curved plates in both walls, and these plates are continuous, whereas *Sigmofungia* has sigmoid plates only in the inner wall, and these plates are not continuous, but isolated within the pores; continuous sigmoid plates are also found in *Bronchocyathus,* a form described later in the present paper, which grows from a normal *Archaeocyathus*-like spitz, as well as in Vologdin's Siberian genus *Cyclocyathus,* and in *Sigmocoscinus,* which is described in the present paper. Among these several forms with sigmoid plates, convergent evolution, to which reference was made in our second paper, has apparently again to be considered. It therefore seems best to defer more precise placing of *Sigmocyathus* until a complete revision of the classification can be attempted.

New Genus *Sigmocyathus.*

May be defined as large turbinate cups with numerous straight septa, without synapticulae or tabulae, the inner wall, or both walls, possess continuous annular sigmoidally-curved plates; growth is from an irregular base of trabecular and vesicular tissue which fills the central cavity and obliterates the septa. The genotype is *Sigmocyathus didymoteichus,* the only species yet described.

*Sigmocyathus didymoteichus=Coscinocyathus didymoteichus* (Taylor).

Drawings to supplement Taylor's figures and descriptions are given in Plate XXII, Fig. 93, and Plate XXIII, Fig. 94. Fig. 94 (B) is a reconstruction of the complete fossil, natural size. Fig. 94 (A) shows an oblique longitudinal section of the *Metacyathus*-like base; the specimen from which this was drawn, the only base we have found, is almost entirely unsilicified, and is rather difficult to interpret in detail; the drawing is therefore diagrammatic. Fig. 93 (A) shows a transverse section of the normally septate upper part. Fig. 93 (B) a radial longitudinal section; the septal pores are oval or slit-like and are in about ten longitudinal rows, the central rows being straight up and down, whilst the inner rows slope upwards and inwards and the outer rows upwards and outwards; as these sloping rows die away on reaching the walls, fresh rows are interpolated in the more central regions to take their place. Fig. 93 (C) shows a surface view of the outer wall, and Fig. 93 (D) a view of the same wall from the septal side. Fig. 93 (E) shows the inner wall, internal view. From these figures the nature of the sigmoid plates and their relation to the wall-pores can readily be seen.

? Order *SPIROCYATHINA* (Bedford).

? Family *SPIROCYATHIDAE* (Taylor).

New Genus *Beltanacyathus.*

Large conical cups with remote, coarse-pored septa; The outer wall an irregular fine mesh carried by an underlying coarser mesh; the inner wall composed of exceedingly large regularly arranged canals leading upwards and inwards into the central cavity. Horizontal external flanges are not developed, but coarse vertical fluting may be present. Genotype, *Beltanacyathus ionicus.*

New Species *Beltanacyathus ionicus.*

This large and handsome form occurs in a small outcrop of poorly silicified material near the "Paint Mine," Beltana, about a mile distant from the Ajax Mine. The cup attained a height of 15 cm. and a diameter of 7 cm., the intervallum coefficient being 25 mm.: 20 mm. Coarse vertical flutings are present externally. The septa are straight and remote, about 24 complete septa being present, but, between these, numerous incomplete septa extend inwards for various distances from the outer wall; every gradation is found between more or less complete septa and mere vertical ridges on the inner surface of the outer wall, these ridges being about 1 mm. apart and breaking up into an irregular network, over ½ mm. thick, pierced by pores about 2 to the mm. which slope upwards and outwards. The outer surface of this porous network gives off a multitude of minute branching papillae (see Fig. 96 (B), (C) ), which form a fine spongy external covering to the pores. The fragment shown in Fig 96 (A) appears to be from the top of a cup; it indicates a rapid expansion in size at the top; a part of the upper surface appears to be covered by a

porous layer; this is shown at the upper left-hand corner of the reconstruction, Fig. 96 (J). The septal pores are large and numerous, about one every two mm. The inner wall is a very strong, regular structure composed of very large canal-like pores, one row to each intersept, leading upwards and inwards into the central cavity (see Fig. 95, 96 (D), (E) ). These canals, in the upper part of the lip, may reach 2 mm. diameter and 5 mm. in length, and a transverse section usually cuts two of them successively at each intersept.

The lower part of the cup is in some cases surrounded by a mass of exothecal tissue, shown in Fig. 96 (G), (J). We are deferring detailed consideration of the exothecal tissue which occurs in connection with several species of Archaeos, because, although apparently part of the organisms themselves, the alternative possibility has to be considered of its being a parasitic growth. Vologdin has described under the name *Labyrinthomorpha* a parasitic form of Archaeo which envelops various Siberian species. We have noticed in the specimen shown in Fig. 96 (G) that in another place the exothecal tissue envelops a second quite distinct genus, with the tissues of which it appears as intimately connected as it does with those of the *Beltanacyathus*.

The spitz of *Beltanacyathus ionicus*, embedded in the exothecal tissue, continues to show the characteristic structure down to a diameter of 2 mm. or less, but a few dissepiments are present in the intervallum.

The genus is placed in the family Spirocyathidae on account of the strong resemblance of the inner wall to that of several forms of *Spirocyathus* and *Pycnoidocyathus;* the outer wall also appears to be of similar type to the outer walls of those genera. The straight septa and absence of synapticulae has already been noted in some species of *Pycnoidocyathus*.

The form described by Taylor as *Archaeocyathus Wirrialpensis* appears to be another species of *Beltanacyathus*, differing in the lighter construction of the inner wall and the absence of the external flutings.

A form apparently identical with *Beltanacyathus ionicus* occurs at Curramulka, S.A.; Fig. 96 (F) shows the inner wall of a Curramulka specimen.

Order *ARCHAEOCYATHINA* (Okulitch).
New Family *PUTAPACYATHIDAE.*
New Genus and Species *Putapacyathus Regularis.*

The new family, genus, and species is founded on a unique and very remarkable fragment from the Ajax limestone which is excellently preserved and enables all essential characters to be determined, with the exception of the base or spitz, which has not yet been found. The specimen has very specialised outer and inner walls, and numerous clearly defined tabulae, but septa are entirely wanting. The fragment is 35 mm. long, conical, 15 mm. diameter at upper and 10 mm. diameter at lower end. The intervallum coefficient is $2\frac{1}{2}$ mm.: 8 mm. (Fig. 97 (A) ). The outer wall has on its inner surface regular vertical ridges, 3 to 1 mm.; these are crossed by narrower bars about 6 to 1 mm., and each oblong space so formed is again divided by a vertical partition so as to give an external surface regularly and quadrately porous, the pores about 6 to 1 mm. The inner wall is still more remarkable; it has a series of vertical ridges in two series, which alternately project into the intervallum and the central cavity, the ridges of either series being about $\frac{1}{2}$ mm. apart. Each ridge has a vertical series of "stirrup" pores, so arranged that opposite each external ridge is an internal row of pores, and opposite each internal ridge is an external row of pores, whilst all pores communicate with tangential perforations in the centre line of the wall, thus giving a clear though indirect communication between central cavity and intervallum. Regularly arranged, nearly horizontal tabulae cross the intervallum at intervals of about 2 mm., and each tabula has numerous somewhat irregular pores about 5 to 1 mm. No septa or other structures representing septa are present. The above described species, *Putapacyathus regularis,* is the genotype of the new genus, the name being taken from Putapa Gap, a prominent mountain feature near the Ajax Mine; (all vowels in Putapa are short, the accent being on the first syllable).

The family may be defined as Archaeocyathidae with ridged and regularly porous walls, with regularly arranged tabulae and absence of septa. The family may perhaps be regarded as derived from a *Coscinocyathus*-like form by reduction of septa, in the same manner as *Dokidocyathus* has been regarded as derived from an *Archaeocyathus*-like form. Possibly the spitz, when found, will throw some light on this point.

Vologdin has described from Siberia a minute form, *Tabulacyathus,* having tabulae and no septa, but the material is insufficient to decide whether the two forms are genetically related or whether it is a case of parallel development; both appear to be very scarce and isolated types.

? Order *ARCHAEOCYATHINA.*
? Family *COSCINOCYATHIDAE.*
New Genus *Sigmocoscinus.*

The genus may be defined as cups with regular straight septa, tabulae of the normal *Coscinocyathus* type and continuous annular sigmoid plates inside the inner wall. The genotype is *Sigmocoscinus sigma.*

New Species *Sigmocoscinus sigma.*

The cup is tubular, conical, 30 mm. or more in length by about 9 mm. diameter in the upper part; intervallum cefficient 2 mm. : 5 mm. Septa are straight and regular, about 2/3 mm. apart. The outer-wall-pores are small, about 4 to one mm., about three rows to each intersept, and are covered externally by overlapping annular plates, about 4 of these occurring in each mm. of length (Fig. 98 (D) ). The inner-wall-pores are larger, about 2 to one mm., one or two rows to each intersept, and are covered internally by annular sigmoid plates projecting into the central cavity, about 2 of them occurring in each mm. of length

(Fig. 98 (E)). Septal pores are in about four rows (Fig. 98 (C)). Tabulae are straight and rather remote, 4 or 5 mm. apart, and have numerous pores, about 5 to the mm. (Fig. 98 (B)).

*Sigmocoscinus* is certainly a distinct type from *Sigmocyathus*, differing from the latter genus not only by its possession of definite tabulae, but also in the finer scale of the outer wall structure, the narrower intervallum, and the nature of the septal pores. Taylor's description and figures of *"Coscinocyathus" didymoteichus* appear to correspond to our *Sigmocyathus* and not to *Sigmocoscinus*.

Order *ARCHAEOCYATHINA* (Okulitch).

New Family *BRONCHOCYATHIDAE*.

New Genus *Bronchocyathus*.

The genus *Bronchocyathus* is proposed to include certain forms from the Ajax Mine which have previously been placed in the genera *Archaeocyathus, Ethmophyllum* and *Coscinocyathus*, but which appear to have sufficient resemblance to one another to justify reclassification. The characteristic features are growth from a normal spitz, the presence of extremely numerous thin and straight septa, a very finely porous outer wall, inner-wall-pores quadrately arranged with a single vertical row of pores to each intersept, the presence of horizontal annular shelves projecting into the central cavity and their tendency to be produced into teeth, collars, or trabecular or vesicular masses within the central cavity, and the spasmodic presence of tabula-like structures. Taylor's species (*Archaeocyathus*) *trachealis* is the genotype. For figures, photographs, and descriptions of this, the commonest of the Ajax species, the reader is referred to Taylor's memoir, and we add a few details not noticed by him. We have found two distinct varieties of outer-wall-pores in *Bronchocyathus trachealis*. In one, for which we propose the name "variety *tectus*," the pores are 5 to the millimeter in two alternating rows in each intersept, and each pore is seen (under favorable conditions) to be covered externally by a small hemispherical cap with a minute aperture at its lower part; (compare *Coscinocyathus papillipora* (Bedford)); see Fig. 102, Plate XXVI. In the other, *Bronchocyathus trachealis* var. *partitus*, the pores are much smaller, 10 to the millimeter, and arranged in a regular quadrate pattern; see Fig. 101, Plate XXVI. The septal pores are difficult to find as a rule, but a particularly fortunate etching is shown in Fig. 99 (A), in which it is seen that about 12 vertical rows of minute pores are present, about 4 to the mm. in each row. The two innermost rows constantly slope upwards and inwards towards the inner wall and the pores are here less numerous; across the septa the pores are arranged in wavy lines, giving a "watered silk" appearance. Peculiar horizontal tabula-like structures are occasionally present; most specimens show none at all, others show one or several at varied distances. The "tabula" is formed by all the septa giving off a series of studs exactly in the one horizontal plane; most of these studs just fail to meet those of neighboring septa, although they correspond exactly in position, but some of them link up; these "tabulae" are shown in Fig 99 (B), (C). *Bronchocyathus* grows from a spitz which even at a level only two mm. in diameter shows a central cavity and the characteristic annular shelves on the inner surface of the inner wall; but a certain number of specimens show a mass of interlacing tubercles which fill the cavity of the lower part of the specimen even as high as a level in which the external diameter attains 12 mm. or more. Presumably this is a later ingrowth from the inner wall, and arises in older specimens; see Fig. 100 (A), Plate XXVI.

In the same genus, *Bronchocyathus*, may be placed *(Ethmophyllum) dentatum* (Taylor) and *(Archaeocyathus) tracheodentatus* (Bedford). Both of these species have fine-pored outer walls, which, in the specimens we have seen, appear intermediate between the two varieties of *Bronchocyathus trachealis* just referred to; the pores are in three alternating rows to the intersept and about 7 to the mm. The septa in both these species are equally close, straight, and numerous with those of *B. trachealis*. In both *dentatus* and *tracheodentatus* the specimens showing septal pores show a single row only, close to the outer wall (see Fig 104 ). This feature appears different from the description we have just given of *B. trachealis*, but a specimen of the latter has been noticed with the single row of septal pores, and probably there is a tendency in all three species for the inner rows of septal pores to become obliterated. The shelves in *B. dentatus* and *tracheodentatus* are decidedly further apart ($2\frac{1}{2}$ to the mm.) than those in B. *trachealis*. For comparison of the three species see Figs. 100 (B), 103, and 104, which are drawn on the same scale of x 12.

New Species *Bronchocyathus sigmoideus*.

The species is founded on a well-preserved fragment which is figured in Plate XXVI, Fig. 105. The specimen is tubular conical, about 20 mm. long by 5 mm. diameter at the upper end; intervallum coefficient $1\frac{1}{2}$ mm.: 2 mm. As in other species of the genus, the outer wall pores are minute; they are about 8 to the mm., arranged in about three alternating rows to each intersept. The septa, as in the other species, are straight, thin, and very numerous, about 1/3 mm. apart; septal pores have not yet been seen. Near the top of the figure is shown a row of swellings on the septa which recall the "tabula"-like structures found occasionally in *Bronchocyathus trachealis*. The inner wall shows an interesting development of the *B. trachealis* type; near the spitz annular bars are present, about 4 to the mm., between which are the wall-pores, one to each intersept; as the upper portion of the specimen is approached the rings are farther apart, and finally are spaced one to the mm., and each ring becomes produced to form an annular sigmoidally-curved plate projecting upwards and inwards into the central cavity.

*Bronchocyathus sigmoideus* corresponds very closely

to Taylor's *Coscinocyathus aulax*, except that Taylor describes in the latter species tabulae about 6 mm. apart. If these tabulae are definite structures of the normal *Coscinocyathus*-like type, *Coscinocyathus aulax* would fall into our new genus *Sigmocoscinus;* but if, as we rather suspect, the tabulae in *Coscinocyathus aulax* are of spasmodic occurrence and resemble those we have just described in *Bronchocyathus trachealis*, then *Coscinocyathus aulax* will fall into the genus *Broncho cyathus*, and will be close to or even identical with our species *sigmoideus*.

Vologdin's Siberian genus *Cyclocyathus* may perhaps be included in the family Bronchocyathidae. We have not read a full description of other details of *Cyclocyathus*, but, as far as the inner walls go, the various species have considerable resemblance to *Bronchocyathus sigmoideus*.

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**CORRIGENDA.**

MEMOIRS OF THE KYANCUTTA MUSEUM, Kyancutta, South Australia.

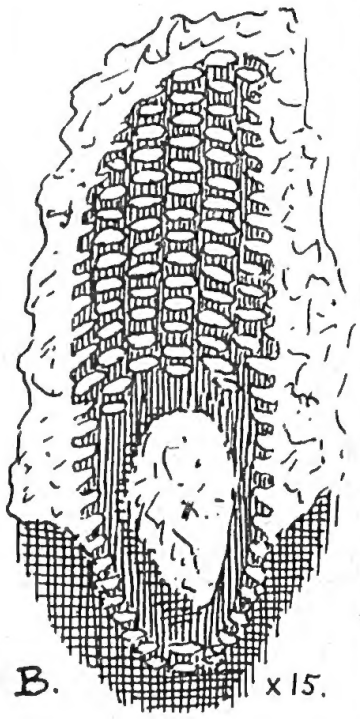
No. 2. April, 1936.

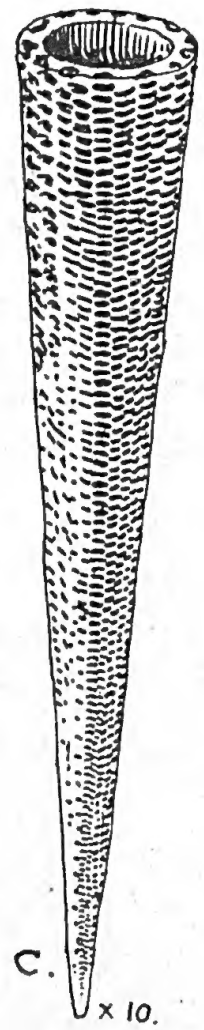
FURTHER NOTES ON ARCHAEOCYATHI (Cyathospongia) AND OTHER ORGANISMS from the Lower Cambrian of Beltana, South Australia. By R. and W. R. Bedford.

P. 15, Col. A, L. 25, for Synaticulae read Synapticulae.
P. 15, Col. A, L. 26, for Synaticulosus read Synapticulosus.
P. 15, Col. A, L. 29, for Sixplex read Simplex.
P. 16, Col. A, L. 19, for arrayed read arranged.
P. 16, Col. A, L. 42, for Sigmoifungia read Sigmofungia.
P. 17, Col. B, L. 13, for Archaecopharetra read Archaeopharetra.
Plate XX., Fig. 87D, for O.W. read I.W. For I.W. read O.W.

NOTE.—At the suggestion of Sir Douglas Mawson and Professor Walter Howchin, and for the convenience of Australian Palaeontologists, all holotypes and other specimens used in the preparation of Memoir No. 2 have been acquired by the South Australian Museum, Adelaide.

Fig. 88



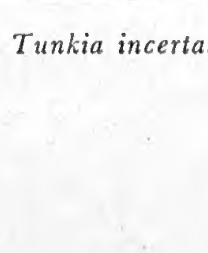
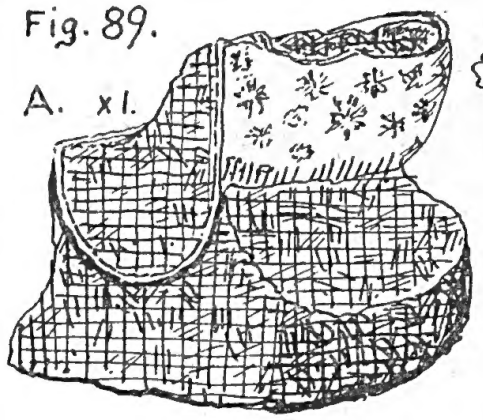




Fig. 89.



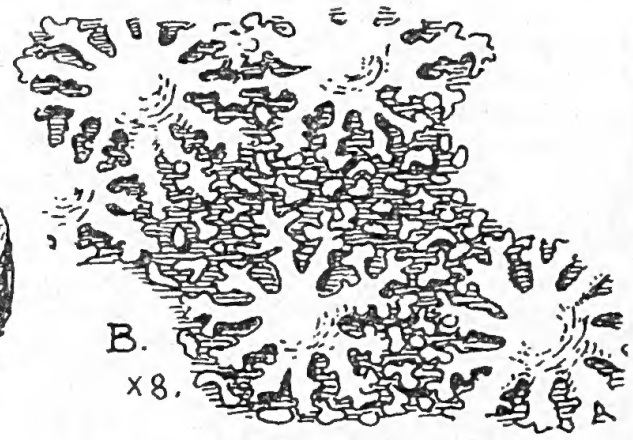
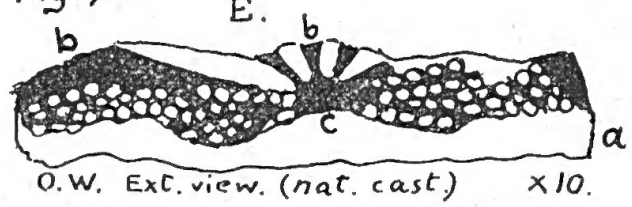
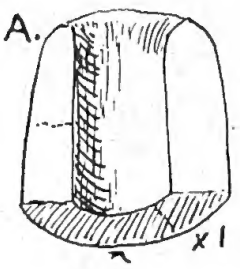
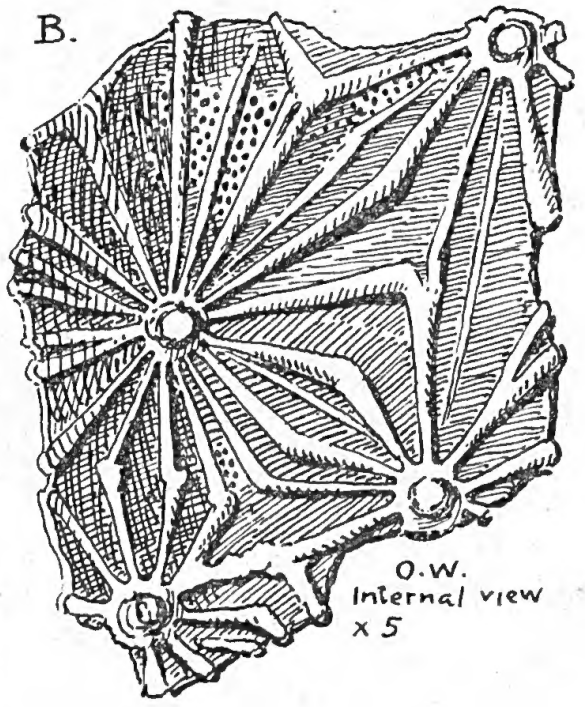
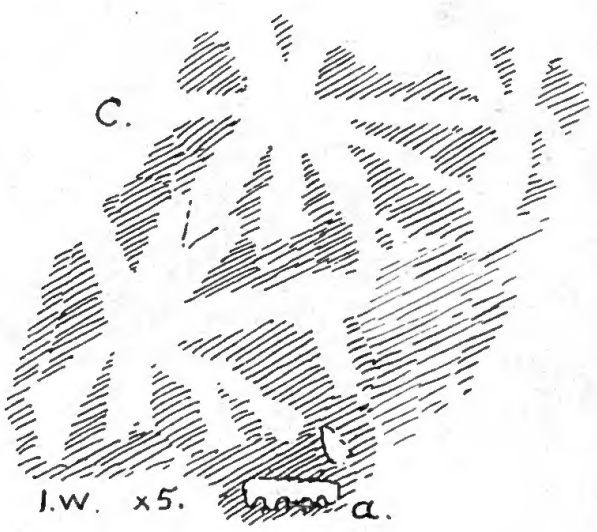



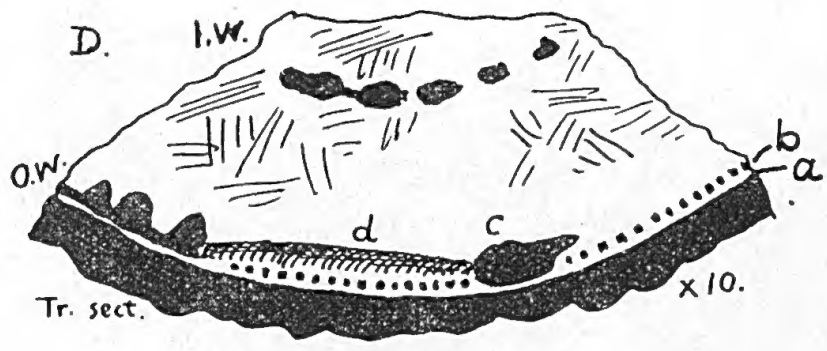

Fig. 90.



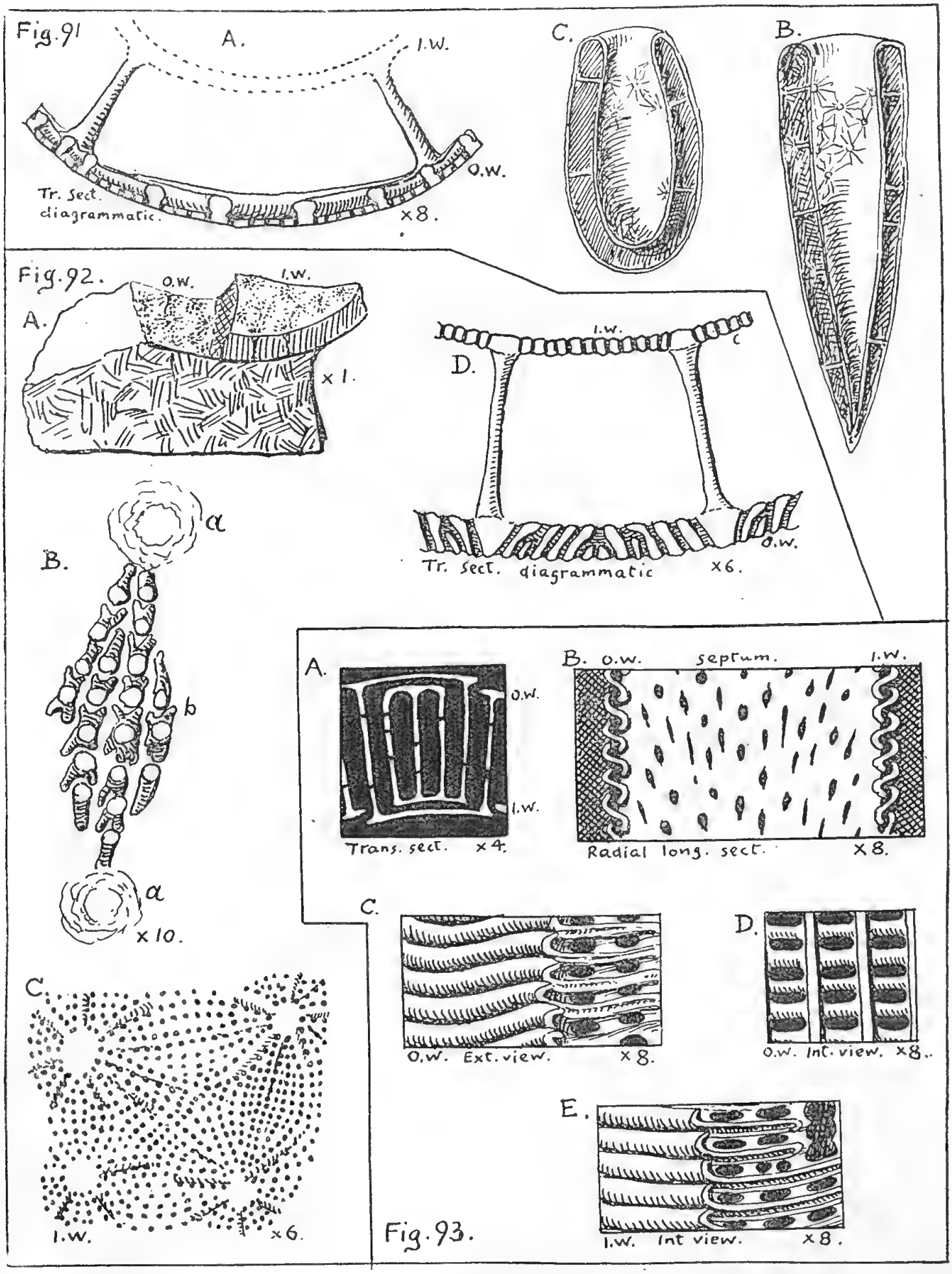



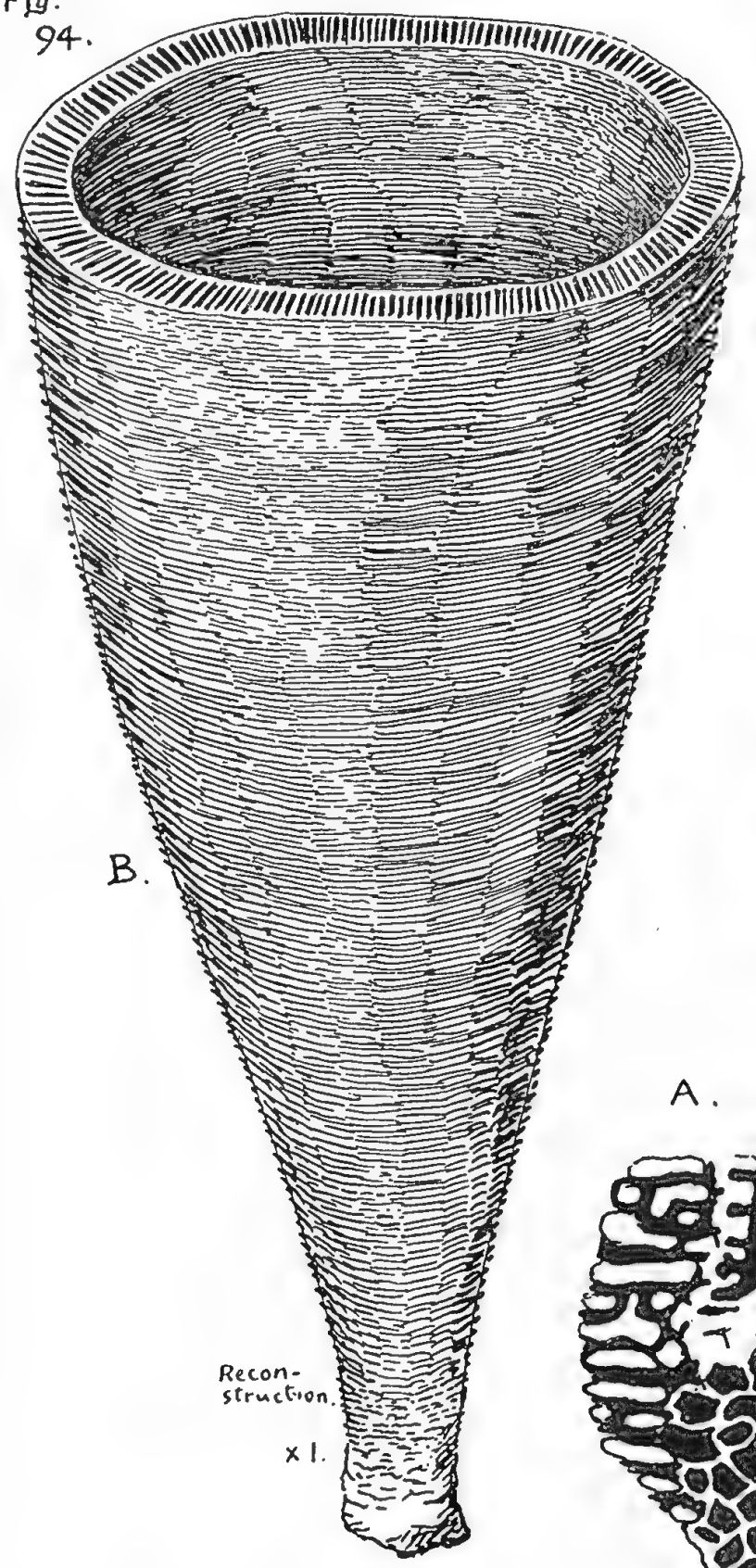




*88. Tunkia incerta.* *89. Uranosphaera ramosa.* *90. Heterocyathus tertius.*




*91. Heterocyathus tertius.* *92. Heterocyathus minor.* *93. Sigmocyathus didymoteichus.*

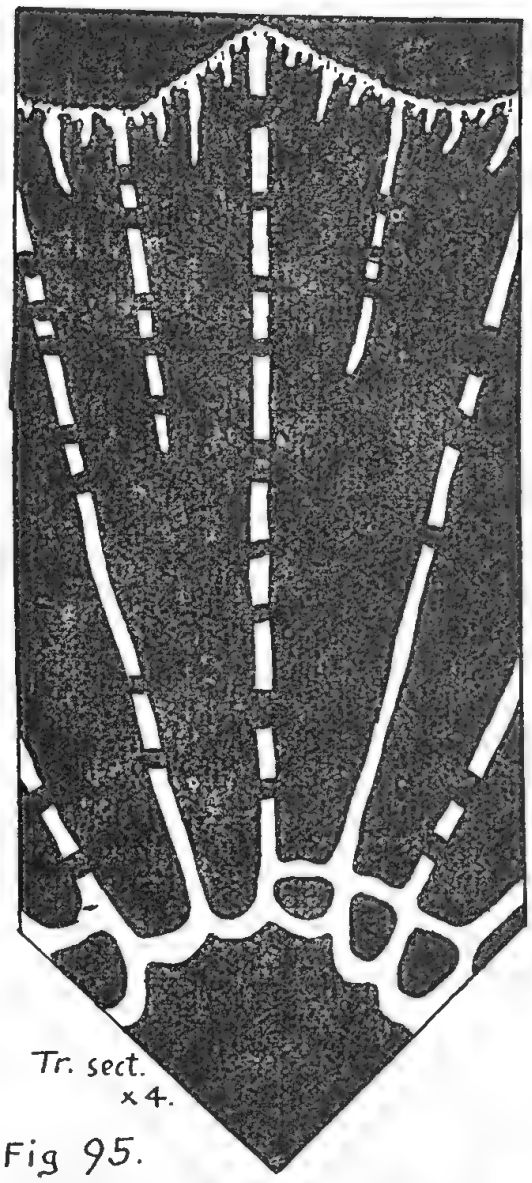
Fig. 94.



B.

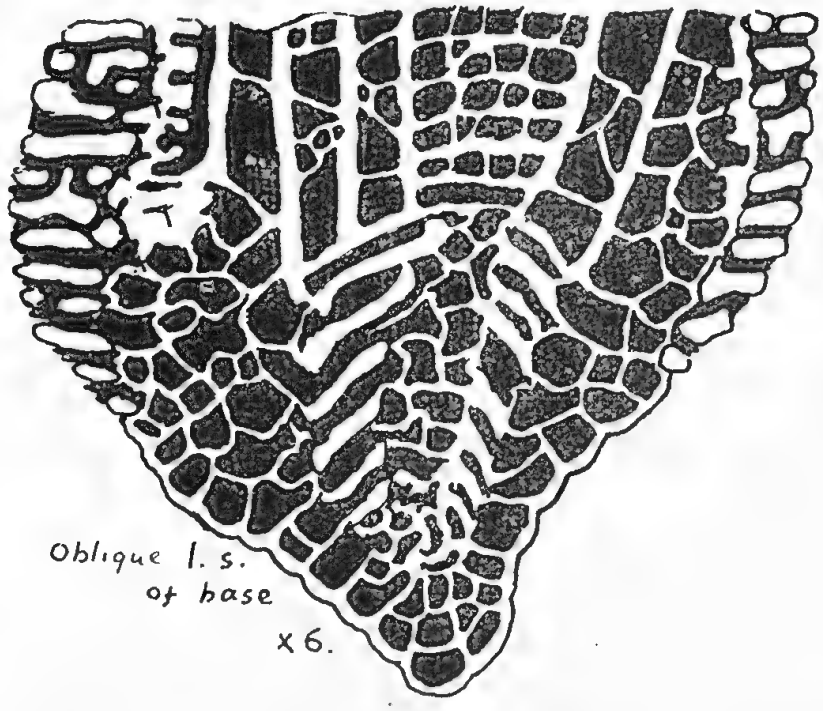
Recon-
struction.
x 1.

A.



Tr. sect.
x 4.

Fig 95.



Oblique l. s.
of base
x 6.

*94. Sigmocyathus didymoteichus.*

*95. Beltanacyathus ionicus.*

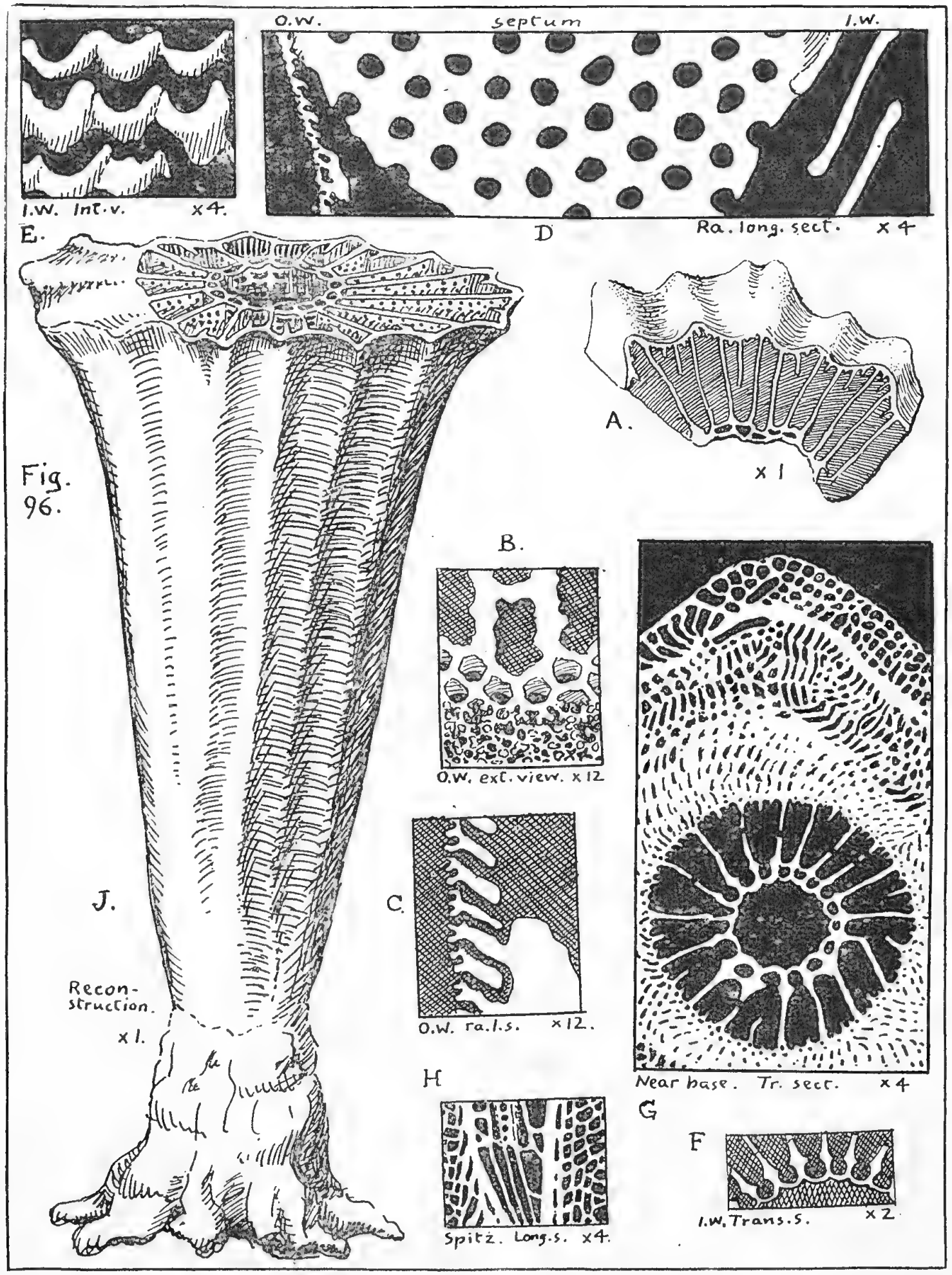



Fig. 96.

*96. Beltanacyathus ionicus.*

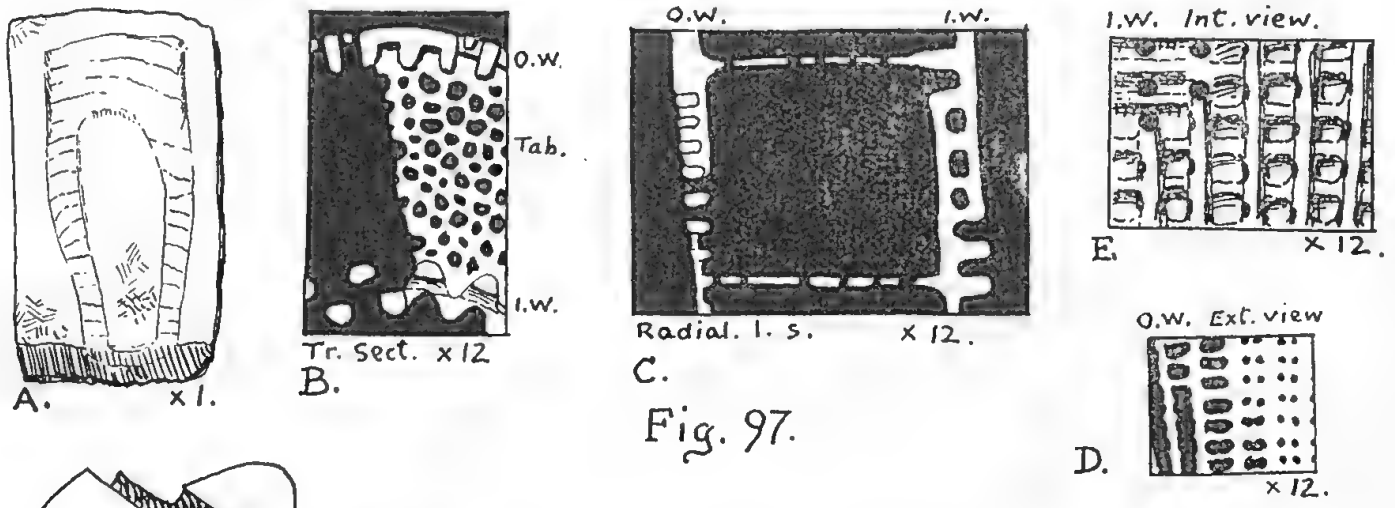



Fig. 97.

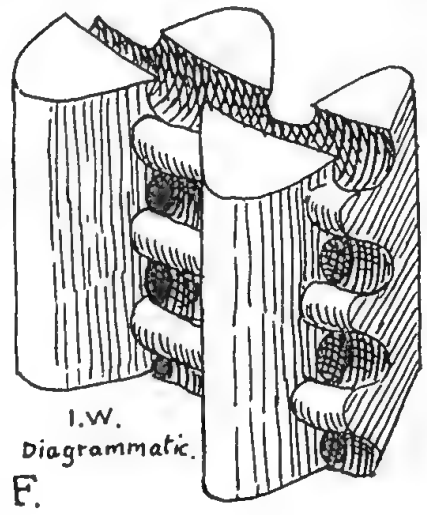
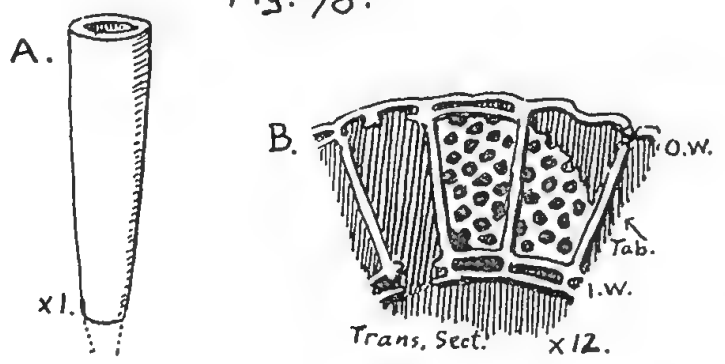



Fig. 98.



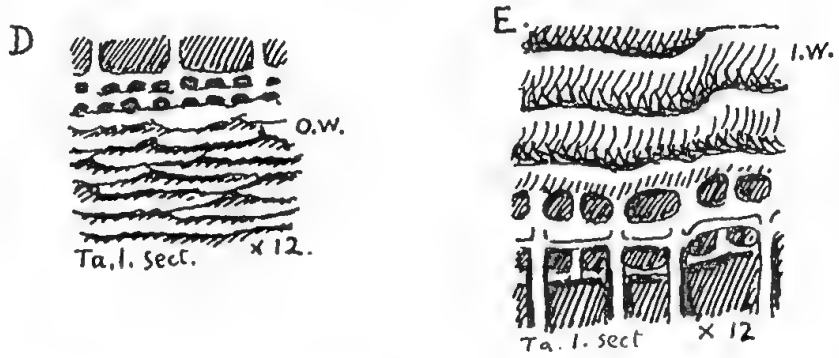
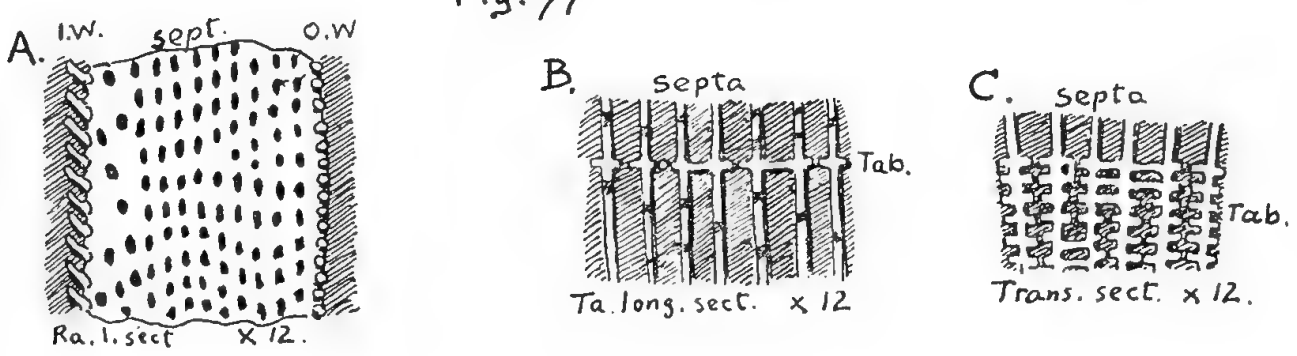
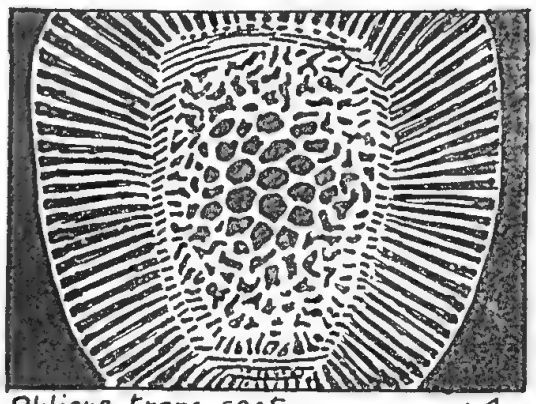




Fig. 99




*97. Putapacyathus regularis.* *98. Sigmocoscinus sigma.* *99. Bronchocyathus trachealis.*



Oblique trans. sect. x 4.
A.

Fig. 100.


Tang. long. sect

Fig. 101.

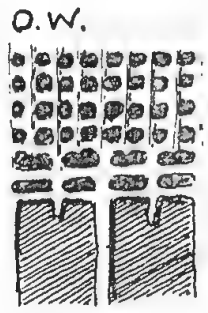



Fig. 102.

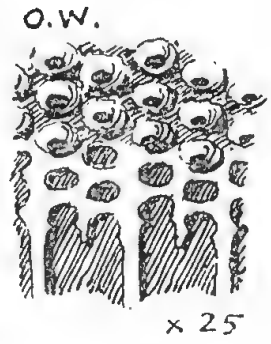
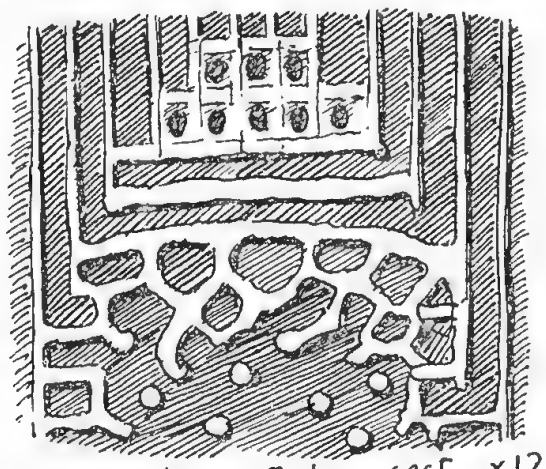
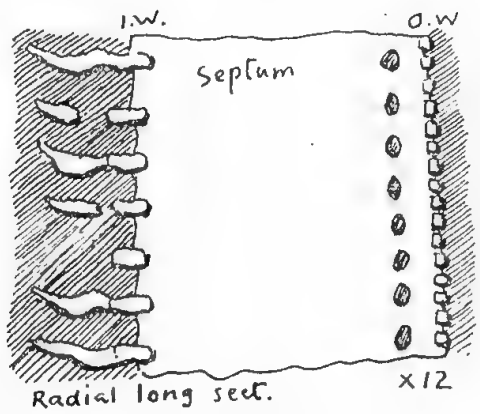



Fig. 103.



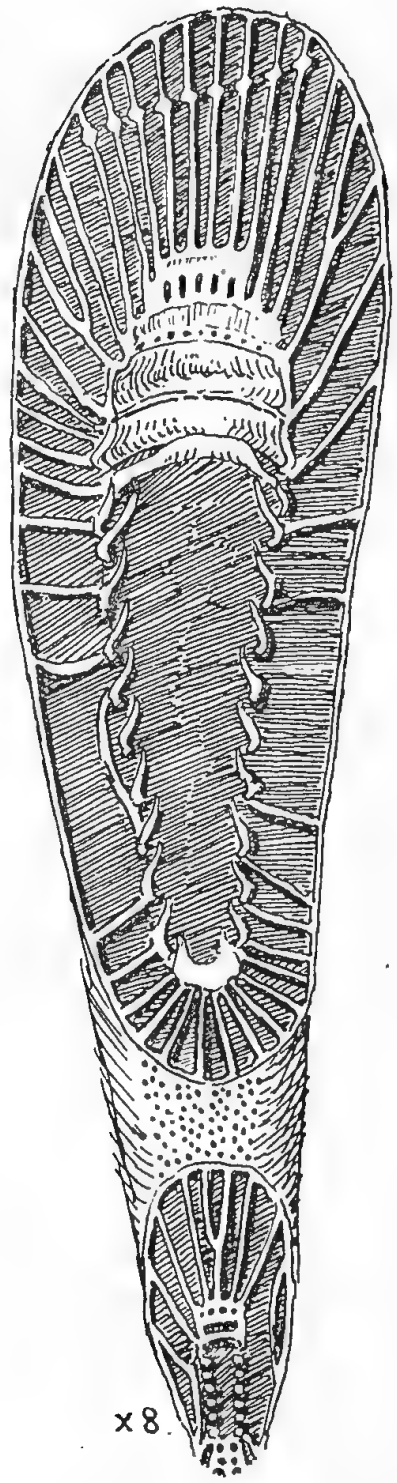
Oblique tangent. long sect. x12

Fig. 104




Radial long sect.

Fig. 105.




*100. Bronchocyathus trachealis.*
*101. Do. var. partitus.*
*102. Do. var. tectus.*
*103. Bronchocyathus dentatus.*
*104. Bronchocyathus tracheodentatus.*
*105. Bronchocyathus sigmoideus.*

MEMOIRS OF THE KYANCUTTA MUSEUM,

No. 1.—NEW SPECIES OF ARCHAEOCYATHINAE AND OTHER ORGANISMS from the Lower Cambrian of Beltana, South Australia. By R. and W. R. Bedford. March, 1934. (pp. 8 and 6 plates, 4to.) Price, post free, Two Shillings.

No. 2.—FURTHER NOTES ON ARCHAEOCYATHI (Cyathospongia) AND OTHER ORGANISMS from the Lower Cambrian of Beltana, South Australia. By R. and W. R. Bedford. April, 1936. (pp. 11 and 14 plates, 4to). Price, post free, Four Shillings.

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The Kyancutta Museum has for Sale and Exchange Duplicate Specimens of ARCHAEOCYATHI. Also other Fossils, Meteories, Mineralogical, Ethnological, and Zoological Specimens. Enquiries from Overseas Museums and Universities are invited.

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